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Appln No. 10/731,385
Amdt date February 22, 2007
Reply to Office action of December 26, 2006

REMARKS/ARGUMENTS

Claims 1 - 20 and 23 - 25 were pending when the Application was examined. Claims 10, 19 and 20 are canceled. Claims 9 and 16 are amended. Claims 1 - 9, 11 - 18 and 23 - 25 remain pending, of which Claims 1, 9, 16 and 23 are independent.

The Examiner has rejected Claims 9, 12, 15, 16 and 18 under 35 U.S.C. §102(b) as being anticipated by Kishino et al. (U.S. Patent No. 5,965,978).

The Examiner has also made the following obviousness rejections under 35 U.S.C. §103: Claims 1 - 5, 8 and 23 - 25 are rejected over Jaskie et al. (U.S. Patent No. 6,410,101) and further in view of Kishino; Claim 11 is rejected over Kishino; Claim 13 is rejected under 35 U.S.C. §103 as being obvious over Kishino and further in view of Toyota et al. (U.S. Patent No. 6,900,066); Claims 10, 17, 19 and 20 are rejected over Kishino and further in view of Jaskie; Claim 6 is rejected over Jaskie, Kishino and further in view of Toyota; Claim 7 is rejected over Jaskie, Kishino and further in view of Peng (U.S. Patent No. 5,726,530); and Claim 14 is rejected over Kishino and further in view of Peng.

35 U.S.C. §103 Rejection of Independent Claims 1 and 23

Claim 1 recites in part "an illumination assembly ... [including] (a) a transparent conductive layer ... having a portion extending beyond the sealant as an anode input terminal to which an anode voltage is applied, (b) a phosphor screen ... and (c) a metal layer formed on the phosphor screen within the vacuum assembly, a portion of the metal layer contacting and electrically connecting to the transparent conductive layer." (Emphasis added.) Applicant submits that Claim 1 is patentable over a combination of Jaskie and Kishino.

In rejection of Claim 1, the Examiner cites to Jaskie for disclosing an illumination

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assembly 100 formed on the second substrate including a transparent conductive layer 124 formed on the surface of the second substrate and having an anode input terminal to which an anode voltage 118 is applied, a phosphor layer, and a metal layer (reflective layer) 128 formed on the screen within the vacuum assembly and a portion of the metal layer 128 electrically connecting to the transparent conductive layer 124. Kishino is cited for disclosing that the anode input terminal is extended beyond the sealant and the anode voltage is applied through the anode lead 28. (Office action, p. 4 - 5.) The Examiner finds it obvious to one of skill in the art to modify the transparent conductive layer 124 of Jaskie by including an anode input terminal extending outside the sealant, as shown by Kishino, for securing good electrical conduction between the anode input terminal and the anode lead. (Office action, p. 5.) Applicant respectfully traverses this rejection.

Jaskie is directed to methods of scrubbing the anode plates to remove the contamination layers. (Jaskie, col. 1, lines 5 - 10.) Jaskie discloses an anode plate 100 that includes a glass substrate 122, an anode 124 disposed on the substrate 122 and made from a transparent conductive material, such as indium tin oxide (ITO), phosphor layers 126 disposed on the anode 124, and a first layer 121 disposed on the phosphors 126 including a reflective layer 128 and a contamination layer 123. (Jaskie, figure 1, col. 2, lines 18 - 34.) The reflective layer 128 is deposited upon the phosphors and the contamination layer 121 is formed upon exposure of the reflective layer 128 to air and is not a desirable layer. (Jaskie, col. 2, lines 30 - 42.) The reflective layer 128 is preferably made from aluminum, gold, titanium, platinum, or palladium. (Jaskie, col. 2, lines 61 - 64.) Jaskie discloses that a potential is applied to the anode 124 by using a voltage source 118. (Jaskie, figure 3, col. 4, lines 11 - 14.) As the Examiner observes, Jaskie does not disclose extending the anode 124 or the reflective layer 128 outside the chamber through the spacer 134 or the spacer passivation layer 136. (Jaskie, figure 3.) Moreover, Jaskie

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discloses the anode voltage source 118 as connected to the anode 124 and not to the reflection layer 128. (Jaskie, figure 3, col. 4, lines 10 - 15.)

Kishino discloses a display portion 7 that includes a fluorescent material 5 and a metal backed layer 6 both forming an anode. (Kishino, figure 3, col. 4, lines 18 - 24.) An anode terminal 6a that is part of the metal backed layer 6 extends out from the vacuum sealed portion through a sidewall portion 4. (Kishino, figure 3, col. 5, lines 10 - 11.) Aside from the phosphor layer, Kishino discloses only one conductive anode layer, namely the metal backed layer 6, that extends outside the vacuum chamber into a getter room 23 to be connected to an anode lead 28. (Kishino, figure 3, col. 5, lines 18 - 29 and 43 - 46.) The reason the metal backed layer 6 is extended outside, through forming the anode terminal 6a, is to protect the sidewall 4 of the sealed portion from dielectric breakdown as a result of the high voltage applied to the anode. (Kishino, col. 10, lines 4 - 10 and col. 2, lines 10 - 15, and lines 30 - 33.)

Kishino applies the anode voltage to the metal layer and devises the two chambers and the special anode lead in order to get the high anode voltage through the metal anode safely and without causing the chamber wall to melt or have a dielectric breakdown. Kishino does not foresee including a second layer of anode with different adhesive and conductive properties that would carry the voltage to the metal layer. Jaskie applies the anode voltage to the transparent anode but does not disclose that it has a reason for doing so and shows the metal layer of the anode flush with the transparent part not disclosing or suggesting any advantage in extending the transparent portion out. Further, in figure 3 of Jaskie, the side showing the wall of the chamber encloses both parts of the anode inside the chamber.

In short, Jaskie shows both metal and ITO parts of the anode inside the chamber; Kishino shows the metal anode extending out. Therefore, even if Kishino were to be combined with

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Jaskie, it would result in the metal part of the anode of Jaskie extending out. Therefore, even the combination of the references does not teach or suggest "a transparent conductive layer ... having a portion extending beyond the sealant as an anode input terminal to which an anode voltage is applied," of Claim 1.

Further, the Applicant submits that there is no suggestion to combine the references as indicated by the Examiner. The Examiner found it obvious to modify the transparent conductive layer 124 of Jaskie by including an anode input terminal extending outside the sealant, as shown by Kishino, for securing good electrical conduction between the anode input terminal and the anode lead. Kishino devised its special anode lead 28 in order to be able to conduct high voltages through a metal anode incompatible with its glass surroundings. If it had used an ITO, it may not have even considered extending the anode, just like Jaskie did not consider doing so.

As such, Jaskie, Kishino, or a combination of the two do not teach or suggest all the limitations of Claim 1. Accordingly, Claim 1 is believed to be allowable over the combination of the cited references.

Claims 2 - 8 are dependent on Claim 1 and are believed to be allowable because of their dependence from an allowable base claim.

Similarly, the combination of Jaskie and Kishino does not appear to teach or suggest "a transparent conductive layer ... having an anode input terminal as a portion of the transparent conductive layer extending beyond the sealant to which an anode voltage is applied; a phosphor screen ... and a metal layer formed on the phosphor screen, and having a portion of the metal layer for contacting and electrically connecting to the transparent conductive layer within the vacuum assembly," of Claim 23. As explained above, a combination of these references may be read as suggesting to extend the metal layer but not the transparent conductive layer.

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Accordingly, Claim 23 is believed to be allowable over the combination of the cited references.

Claims 24 - 25 are dependent on Claim 23 and are believed to be allowable because of their dependence from an allowable base claim.

35 U.S.C. §102 Rejection of Independent Claims 9 and 16

Independent Claim 9 is amended to recite "A field emission display, comprising: a first substrate and a second substrate ... being sealed using a sealant ... a vacuum assembly in an area encompassed by the sealant; an electron emission assembly ... and an illumination assembly ... wherein the illumination assembly includes a phosphor screen ... a metal layer formed on the phosphor screen within the vacuum assembly, and an anode input terminal formed extending from within the vacuum assembly to outside of the sealant, in which an end of the anode input terminal within the vacuum assembly contacts the metal layer to be electrically connected to the metal layer and an anode voltage is applicable to a portion of the anode input terminal extending beyond the sealant, wherein the anode input terminal is a thin film made from a material selected from a group consisting of indium tin oxide, Ni, and Cr." (Emphasis added.) As amended, Claim 9 is not believed to be anticipated by Kishino.

As explained above, the anode terminal of Kishino is an extension of the same metallic material forming the metal backed layer 6 and is itself a metal. Therefore, Kishino does not disclose that "the illumination assembly includes ... an anode input terminal ... made from a material selected from a group consisting of indium tin oxide, Ni, and Cr." (Emphasis added.) Accordingly, amended Claim 9 is not anticipated by Kishino and is believed to be allowable over this reference.

Claims 12 and 15 depend from Claim 9 and are believed to be allowable for their dependence from an allowable base claim.

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Claim 11 is rejected under 35 U.S.C. §103 as being obvious over Kishino, the Examiner finding the additional limitation of Claim 11 obvious in view of Kishino. Kishino does not teach or suggest "an anode input terminal ... made from a material selected from a group consisting of indium tin oxide, Ni, and Cr," of amended Claim 9. As such Claim 9 is not obvious in view of Kishino and is believed to be allowable over this reference. Claim 11 that depends from Claim 9 is thus believed to be allowable over Kishino because it depends from an allowable base claim.

Claim 13 is rejected under 35 U.S.C. §103 as being obvious over Kishino and further in view of Toyota and Claim 14 is rejected over Kishino and further in view of Peng. Toyota is cited for disclosing the type of emission sources and Peng is cited for disclosing the insulation layer; neither is cited for disclosing "an anode input terminal ... made from a material selected from a group consisting of indium tin oxide, Ni, and Cr," of Claim 9 that is one of the elements missing from Kishino. Accordingly, Claim 9 remains patentable over the combination of these references with Kishino and Claims 13 and 14, that depend from Claim 9, are believed to be allowable because of their dependence from an allowable base claim.

Independent Claim 16 is amended to recite "A flat panel display, comprising: a faceplate ... a backplate ... sidewalls ... to form an enclosed vacuum envelope ... a phosphor layer ... a transparent conductive layer formed between the faceplate and the phosphor layer; a metal layer positioned on the phosphor layer, ... the transparent conductive layer includes an anode input terminal extending from within the vacuum envelope to outside the sidewalls, and ... the anode voltage is applied to the transparent conductive layer through the anode input terminal outside the sidewalls." (Emphasis added.) As amended, Claim 16 is not believed to be anticipated by Kishino.

As explained above, the anode of Kishino includes a fluorescent material and a metal

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backed material but not "a transparent conductive layer formed between the faceplate and the phosphor layer," of amended Claim 16 and does not anticipate this claim.

Claim 18 depends from Claim 16 and is believed to be allowable for its dependence from an allowable base claim.

Further, Claim 17, that depends from amended Claim 16, is rejected under 35 U.S.C. §103 as being obvious over Kishino and further in view of Jaskie. Jaskie was cited for disclosing that the metal layer 6 has a larger area than the phosphor layer 5. As the arguments of the current Response provide, even a combination of Kishino and Jaskie does not teach or suggest that "the transparent conductive layer includes an anode input terminal extending from within the vacuum envelope to outside the sidewalls," or that "the anode voltage is applied to the transparent conductive layer" of amended Claim 16. As such, amended Claim 16 is believed to be allowable over the combination of Kishino and Jaskie and Claim 17 is believed to be allowable because of dependence from an allowable base claim.

Therefore, in view of the above amendment and remarks it is submitted that the now pending claims are patentably distinct over the cited references and that all the rejections to the claims have been overcome. As such, allowance of the above Application is requested.

Respectfully submitted,

CHRISTIE, PARKER & HALE, LLP

By 

Fariba Sirjani
Reg. No. 47,947
626/795-9900

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